Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the claims

Claim 1. (Currently amended) A method of *ex-vivo* expanding stem and/or progenitor cells, while at the same time, ~~substantially~~ inhibiting differentiation of the stem and/or progenitor cells, the method comprising:

(a) obtaining a population of cells comprising stem and/or progenitor cells;

(b) seeding said stem and/or progenitor cells into a stirred flask or rotating wall vessel bioreactor, and

(c) culturing said stem and/or progenitor cells *ex-vivo* in said bioreactor without stromal cells or a feeder layer, under conditions allowing for cell proliferation and, at the same time, culturing said cells in the presence of a copper chelator ~~under conditions selected from the group consisting of:~~

~~(i) conditions reducing expression and/or activity of CD38 in said cells;~~

~~(ii) conditions reducing capacity of said cells in responding to signaling pathways involving CD38 in said cells;~~

~~(iii) conditions reducing capacity of said cells in responding to retinoic acid, retinoids and/or Vitamin D in said cells;~~

~~(iv) conditions reducing capacity of said cells in responding to signaling pathways involving the retinoic acid receptor, the retinoid X receptor and/or the Vitamin D receptor in said cells;~~

~~(v) conditions reducing capacity of said cells in responding to signaling pathways involving PI 3-kinase;~~

~~(vi) conditions wherein said cells are cultured in the presence of nicotinamide, a nicotinamide analog, a nicotinamide or a nicotinamide analog derivative or a nicotinamide or a nicotinamide analog metabolite;~~

~~(vii) conditions wherein said cells are cultured in the presence of a copper chelator;~~

~~(viii) conditions wherein said cells are cultured in the presence of a copper chelate;~~

~~(ix) conditions wherein said cells are cultured in the presence of a PI 3-kinase inhibitor;~~

thereby expanding said ~~the~~ stem and/or progenitor cells while at the same time, substantially inhibiting differentiation of said ~~the~~ stem and/or progenitor cells *ex-vivo*, wherein said copper chelator is tetraethylenepentamine and wherein said providing said conditions for cell proliferation is effected by providing the cells with early-acting cytokines.

Claim 2. (Currently amended) The method of claim 1, wherein said stem and/or progenitor cells are derived from a source selected from the group consisting of ~~hematopoietic cells,~~ umbilical cord blood cells, G-CSF mobilized peripheral blood cells and [[,]] bone marrow cells~~, hepatic cells, pancreatic cells, intestinal cells, neural cells, oligodendrocyte cells, keratinocytes, skin cells, muscle cells, bone cells, chondrocytes and stroma cells~~.

Claim 3. (Original) The method of claim 1, further comprising the step of selecting a population of stem cells enriched for hematopoietic stem cells.

Claim 4. (Original) The method of claim 3, wherein said selection is affected via CD34.

Claim 5. (Original) The method of claim 1, further comprising the step of selecting a population of stem cells enriched for early hematopoietic stem/progenitor cells.

Claim 6. (Original) The method of claim 5, wherein said selection is affected via CD133.

Claim 7. (Original) The method of claim 1, wherein step (b) is followed by a step comprising selection of stem and/or progenitor cells.

Claim 8. (Original) The method of claim 7, wherein said selection is affected via CD 133 or CD 34.

Claim 9-10. (Canceled)

Claim 11. (Currently amended) The method of claim [[10]]1, wherein said early acting cytokines are selected from the group consisting of stem cell factor, FLT3 ligand, interleukin-6, thrombopoietin and interleukin-3.

Claim 12. (Withdrawn) The method of claim 10, wherein said late acting cytokines are selected from the group consisting of granulocyte colony stimulating factor, granulocyte/macrophage colony stimulating factor and erythropoietin.

Claim 13. (Withdrawn) The method of claim 10, wherein said late acting cytokine is granulocyte colony stimulating factor.

Claim 14. (Original) The method of claim 1, wherein said stem and/or progenitor cells are genetically modified cells.

Claim 15. (Withdrawn) The method of claim 1, wherein said inhibitors of PI 3-kinase are wortmannin and/or LY294002.

Claim 16. (Canceled)

Claim 17. (Withdrawn) The method of claim 16, wherein said static bioreactor is selected from the group consisting of well plates, tissue-culture flasks and gas-permeable culture bags.

Claim 18. (Original) The method of claim 1, wherein said culturing said cells of step (c) is effected in suspension culture.

Claim 19. (Original) The method of claim 1, wherein said culturing said cells of step (c) is effected on a porous scaffold.

Claim 20. (Original) The method of claim 19, wherein said porous scaffold is selected from the group consisting of poly (glycolic acid), poly (DL-lactic-*co*-glycolic acid), alginate, fibronectin, laminin, collagen, hyaluronic acid, Polyhydroxyalkanoate, poly 4 hydroxybutirate (P4HB) and polygluconic acid (PGA).

Claim 21. (Original) The method of claim 19, wherein said porous scaffold comprises a hydrogel.

Claim 22. (Original) The method of claim 1, wherein said seeding is static seeding or perfusion seeding.

Claim 23. (Canceled)

Claim 24. (Withdrawn) A conditioned medium isolated from the expanded stem and/or progenitor cell culture of claim 1.

Claim 25. (Withdrawn) A method of preparing a stem and/or progenitor cell conditioned medium, the method comprising:

(a) establishing a stem and/or progenitor cells culture in a bioreactor according to claim 1, thereby expanding the stem and/or progenitor cells while at the same time, substantially inhibiting differentiation of the stem and/or progenitor cells *ex-vivo*; and

(b) when a desired stem and/or progenitor cell density has been achieved, collecting medium from said bioreactor, thereby obtaining the stem and/or progenitor cell conditioned medium.

Claim 26. (Withdrawn) The stem and/or progenitor cell conditioned medium of claim 25.

Claim 27. (Withdrawn) A method of transplanting *ex-vivo* expanded stem and/or progenitor cells into a recipient, the method comprising:

(a) obtaining a population of cells comprising stem and/or progenitor cells;

(b) seeding said stem and/or progenitor cells into a bioreactor, and

(c) culturing said stem and/or progenitor cells *ex-vivo* in said bioreactor under conditions allowing for cell proliferation and, at the same time, culturing said cells under conditions selected from the group consisting of:

(i) conditions reducing expression and/or activity of CD38 in said cells;

(ii) conditions reducing capacity of said cells in responding to signaling pathways involving CD38 in said cells;

(iii) conditions reducing capacity of said cells in responding to retinoic acid, retinoids and/or Vitamin D in said cells;

(iv) conditions reducing capacity of said cells in responding to signaling pathways involving the retinoic acid receptor, the retinoid X receptor and/or the Vitamin D receptor in said cells;

(v) conditions reducing capacity of said cells in responding to signaling pathways involving PI 3-kinase;

(vi) conditions wherein said cells are cultured in the presence of nicotinamide, a nicotinamide analog, a nicotinamide or a nicotinamide analog derivative or a nicotinamide or a nicotinamide analog metabolite;

(vii) conditions wherein said cells are cultured in the presence of a copper chelator;

(viii) conditions wherein said cells are cultured in the presence of a copper chelate;

(ix) conditions wherein said cells are cultured in the presence of a PI 3-kinase inhibitor; and

(d) recovering said expanded stem and/or progenitor cells from said bioreactor, and

(e) transplanting into said recipient said *ex-vivo* expanded stem and/or progenitor cells produced in steps (b)- (d).

Claim 28. (Withdrawn) The method of claim 27, wherein said stem and/or progenitor cells are derived from a source selected from the group consisting of hematopoietic cells, umbilical cord blood cells, G-CSF mobilized peripheral blood cells, bone marrow cells, hepatic cells, pancreatic cells, intestinal cells, neural cells, oligodendrocyte cells, skin cells, keratinocytes, muscle cells, bone cells, chondrocytes and stroma cells.

Claim 29. (Withdrawn) The method of claim 27, further comprising the step of selecting a population of stem cells enriched for hematopoietic stem cells.

Claim 30. (Withdrawn) The method of claim 29, wherein said selection is affected via CD34.

Claim 31. (Withdrawn) The method of claim 27, further comprising the step of selecting a population of stem cells enriched for early hematopoietic stem/progenitor cells.

Claim 32. (Withdrawn) The method of claim 31, wherein said selection is affected via CD133.

Claim 33. (Withdrawn) The method of claim 27, wherein step (c) is followed by a step comprising selection of stem and/or progenitor cells.

Claim 34. (Withdrawn) The method of claim 33, wherein said selection is affected via CD 133 or CD 34.

Claim 35. (Withdrawn) The method of claim 27, wherein said stem and/or progenitor cells of step (b) are obtained from said recipient.

Claim 36. (Withdrawn) The method of claim 27, wherein said providing said conditions for cell proliferation is effected by providing the cells with nutrients and cytokines.

Claim 37. (Withdrawn) The method of claim 36, wherein said cytokines are selected from the group consisting of early acting cytokines and late acting cytokines.

Claim 38. (Withdrawn) The method of claim 37, wherein said early acting cytokines are selected from the group consisting of stem cell factor, FLT3 ligand, interleukin-6, thrombopoietin and interleukin-3.

Claim 39. (Withdrawn) The method of claim 37, wherein said late acting cytokines are selected from the group consisting of granulocyte colony stimulating factor, granulocyte/macrophage colony stimulating factor and erythropoietin.

Claim 40. (Withdrawn) The method of claim 39, wherein said late acting cytokine is granulocyte colony stimulating factor.

Claim 41. (Withdrawn) The method of claim 27, wherein said stem and/or progenitor cells are genetically modified cells.

Claim 42. (Withdrawn) The method of claim 27, wherein said inhibitors of PI 3-kinase are wortmannin and/or LY294002.

Claim 43. (Withdrawn) The method of claim 27, wherein said bioreactor is selected from the group consisting of a static bioreactor, a stirred flask bioreactor, a rotating wall vessel bioreactor, a hollow fiber bioreactor and a direct perfusion bioreactor.

Claim 44. (Withdrawn) The method of claim 43, wherein said static bioreactor is selected from the group consisting of well plates, tissue-culture flasks and gas-permeable culture bags.

Claim 45. (Withdrawn) The method of claim 27, wherein said culturing said cells of step (c) is effected in suspension culture.

Claim 46. (Withdrawn) The method of claim 27, wherein said culturing said cells of step (c) is effected on a porous scaffold.

Claim 47. (Withdrawn) The method of claim 46, wherein said porous scaffold is selected from the group consisting of poly (glycolic acid), poly (DL-lactic-*co*-glycolic acid), alginate, fibronectin, laminin, collagen, hyaluronic acid, Polyhydroxyalkanoate, poly 4 hydroxybutirate (P4HB) and polygluconic acid (PGA).

Claim 48. (Withdrawn) The method of claim 41, wherein said porous scaffold comprises a hydrogel.

Claim 49. (Withdrawn) The method of claim 27, wherein said seeding is static seeding or perfusion seeding.

Claim 50. (Withdrawn) The method of claim 27, wherein said culturing of said cells of steps (b) and (c) is effected without stromal cells or a feeder layer.